LISTING OF CLAIMS:

1. (previously presented) An optical device, comprising:

an encoding surface having a micro-relief pattern over at least part thereof, the micro-relief pattern having a predetermined spatial distribution thereby to produce a predetermined diffracted first image when illuminated in use, and

an optically anisotropic layer of liquid crystal material located over said encoding surface and having an orientation with the optical axis lying substantially parallel to said encoding surface,

wherein at least part of said micro-relief pattern induces local orientation of the optical axis of said optically anisotropic layer thereby to align the local optical axis at respective orientations corresponding to the predetermined spatial distribution of said micro-relief pattern to impose a predetermined spatial distribution of polarization modulation and wherein the orientations of the optical axis of said optically anisotropic layer are fixed, thereby to produce a predetermined polarized second image when illuminated in use so that both a diffracted image and a polarized image are viewable in which both the diffracted image and the polarized image vary spatially across at least part of the overall image.

2. (original) An optical device according to Claim 1, wherein said micro-relief pattern is provided on a layer in contact with said optically anisotropic layer thereby to define said encoding surface.

3. (original) An optical device according to Claim 1, wherein said encoding surface is formed on the optically anisotropic layer.

4. (previously presented) An optical device according to claim 1, wherein said encoding surface includes one or more regions having a significant diffractive effect and one or more relatively weakly diffractive regions where there is little or no diffractive effect.

5. (previously presented) An optical device as claimed in claim 1, wherein said encoding surface includes a plurality of areas, each of which having a respective orientation of the micro-relief pattern thereon, defining respective optical axes of the optically anisotropic layer.

6. (previously presented) An optical device according to claim 1, wherein a coating thickness of at least part of the optically anisotropic layer is selected having regard to the

frequency of the intended illumination in use, to provide phase retardation when appropriately viewed.

7. (previously presented) An optical device according to claim 2, wherein a coating thickness of at least part of the optically anisotropic layer is selected having regard to the frequency, of the intended illumination in use, to provide a phase retardation when appropriately viewed.

8. (previously presented) An optical device according to claim 1, wherein at least one of: the average thickness of the optically anisotropic layer, and its birefringence varies with position across said device to vary the optical retardation induced thereby.

9. (previously presented) An optical device according to claim 1 wherein the encoding surface is stepped, whereby the thickness of the optically anisotropic layer is stepped by a step distance which is substantially greater than the structure pitch dimension, thereby to provide regions of respective selected retardations.

10. (original) An optical device according to Claim 8, wherein the thickness of said optically anisotropic layer,

disregarding the micro-relief pattern is generally continuously contoured.

11. (original) An optical device according to Claim 10, wherein the thickness of said optically anisotropic material, disregarding the micro-relief pattern, varies linearly in at least one dimension.

12. (previously presented) An optical device according to claim 1, wherein the encoding surface is reflective over at least part of the device, whereby at least part of said device is adapted to operate in reflection mode.

13. (previously presented) An optical device according to claim 1, wherein at least part of the surface of the optically anisotropic layer remote from the encoding surface is at least partially reflective.

14. (original) An optical device according to Claim 2, wherein the micro-relief layer comprises a transmissive substrate and at least part of the surface thereof remote from the interface with the optically anisotropic layer is reflective.

15. (previously presented) An optical device according to claim 1, adapted to operate in use in transmission mode.

16. (previously presented) An optical device according to claim 1, adapted to operate in use in reflection mode.

17. (previously presented) An optical device according to claim 1, wherein said optically anisotropic layer comprises a polymerisable liquid crystalline material fixed to a single substrate, and the polarized image is obtained through local polarization modulations on the single substrate, said anisotropic layer remaining always anisotropic.

18. (previously presented) An optical device according to claim 1, wherein said optically anisotropic layer comprises a polymer liquid crystal material.

19. (previously presented) An optical device according to claim 1, wherein the orientation of said optically anisotropic layer is permanently preserved by a fixing process.

20. (previously presented) An optical device according to Claim 2, wherein the refractive index of the micro-relief layer is substantially equal to the ordinary or extraordinary refractive index of the optically anisotropic layer.

21. (previously presented) A method of producing an optical device which comprises:

providing an encoding surface having a micro-relief pattern over at least part thereof, the micro-relief pattern having a predetermined spatial distribution thereby to produce a predetermined diffracted first image when illuminated in use, and

providing an optically anisotropic layer of liquid crystal material over said encoding surface, having an orientation with the optical axis or axes lying substantially parallel to said encoding surface,

wherein at least part of said micro-relief pattern induces local orientation of the optical axis of said optically anisotropic layer thereby to align the local optical axis at respective orientations corresponding to the predetermined spatial distribution of said micro-relief pattern to impose a predetermined spatial distribution of polarization modulation, wherein the orientations of the optical axis of said anisotropic layer are fixed, thereby to produce a predetermined polarized second image when illuminated in use.

22. (previously presented) A method according to Claim 21, which includes providing a micro- relief layer and applying said layer of optically anisotropic material thereto thereby to define said encoding surface, said micro-relief layer comprising a substrate, said anisotropic material being polymerized and

fixed, the polarized image being obtained through local modulations made only on the substrate, said anisotropic layer remaining always anisotropic.

23. (previously presented) A method according to Claim 21, wherein said micro-relief pattern is formed by embossing.

24. (previously presented) A method according to Claim 21, wherein said micro-relief pattern is formed by UV curing of a suitable material in contact with a master.

25. (previously presented) A security device including an optical device according to claim 1.

26. (previously presented) A bank note including an optical device according to claim 1.

27. (previously presented) A security document including an optical device according to claim 1.

28. (previously presented) An Identification Card including an optical device according to claim 1.

29. (previously presented) A container including an optical device according to claim 1.

30. (previously presented) Packaging including an optical device according to claim 1.

31. (previously presented) A data storage device including an optical device according to claim 1.

32. (previously presented) A method of authentication of an article or substance, which comprises applying to said article or substance an optical device in accordance with claim 1, and thereafter examining said article or substance for the presence of at least one of said first and second images.

33. (previously presented) An optical device according to Claim 1, wherein the liquid crystal material has a planar orientation with the optical axis lying substantially parallel to said encoding surface and the optical axis following directions of the predetermined spatial distribution of said micro-relief pattern.

34. (previously presented) A method according to Claim 21 wherein the liquid crystal material has a planar orientation with the optical axis lying substantially parallel to said encoding surface and following directions of the predetermined spatial distribution of the micro-relief pattern.